



UTM
UNIVERSITI TEKNOLOGI MALAYSIA

FACULTY OF COMPUTING

SECR1213-06

TASK 3: CHOOSING THE APPROPRIATE LAN DEVICES

Course Code: SECR1213

Section: 06



Lecturer: Assoc. Prof. Dr. Mohd Murtadha bin Mohamad


Group Members: (9) NASDAQ


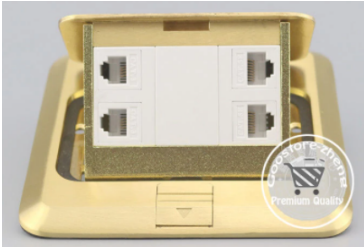
NO.	NAME	MATRIX NO.
1	Ahmad Nazran bin Yusri	A20EC0179
2	Megat Irfan Zackry bin Ismail	A20EC0205
3	Muhammad Hafizzul bin Abdul Manap	A20EC0211
4	Tie Sing Hao	A20EC0168



Task 3 - Choosing The Appropriate LAN Device



After having a preliminary analysis and the floor plan laid out, we began by researching the appropriate tools and devices needed to accomplish the networking task. At the same time, we did some price surveying when choosing the right devices as we need to meet the given budget which is RM900,000. Below are the chosen devices and items:




No.	Device	Detail/Characteristic	Price Per Unit (RM)	Quantity	Subtotal (RM)
1.	<p>Omada Gigabit VPN Router ER7206 (TL-ER7206)</p> 	<ul style="list-style-type: none"> ● Highly Secure VPN: Supports up to 100× LAN-to-LAN IPsec, 50× OpenVPN*, 50× L2TP, and 50× PPTP VPN connections. ● Abundant Security Features: Advanced firewall policies, DoS defense, IP/MAC/URL filtering, and more security functions protect your network and data. ● Gigabit Ports: 1 gigabit SFP and 5 gigabit RJ45 ports provide high-speed wired connectivity. 	1399.00	1	1399.00
2.	<p>Access point AX3600 Wireless Dual Band Multi-Gigabit Ceiling Mount Access Point</p> 	<ul style="list-style-type: none"> ● Interface : 1× 2.5 Gbps Ethernet Port (supports IEEE802.3at PoE) ● Antenna Type Internal Omni : 2.4 GHz: 4× 5 dBi / 5 GHz: 4× 6 dBi ● Mounting : Ceiling /Wall Mounting (Kits included) ● Wireless Standards : IEEE 802.11ax/ac/n/g/b/a ● Frequency : 2.4 GHz and 5 GHz ● Signal Rate : 5 GHz: Up to 2402 Mbps / 2.4 GHz: Up to 	1299.00	2	2598.00



		<p>1148 Mbps</p> <ul style="list-style-type: none"> ● Ultra-Fast Wi-Fi 6 Speeds ● High-Density Connectivity ● Integrated into Omada SDN ● Centralized Management ● 2.5G Port ● Seamless Roaming ● PoE+ Support: ● Secure Guest Network 			
3.	<p>48 port switch Ubiquiti Switch Pro 48 PoE USW-Pro-48-PoE</p> 	<ul style="list-style-type: none"> ● Switch type: Managed, ● Switch layer: L2/L3. Basic switching RJ-45 ● Ethernet ports type: Gigabit Ethernet (10/100/1000). Basic switching RJ-45 ● Ethernet ports quantity: 48 ● Installed SFP+ modules quantity: 4 Full duplex. ● Switching capacity: 176 Gbit/s ● Networking standards: IEEE 802.3af, IEEE 802.3at. ● 600W total PoE supply ● Near-silent cooling ● Layer 3 switching feature 	5190.49	4	20761.96




4.	<p>TL-SG1005P V2 5-Port Gigabit Desktop Switch with 4-Port PoE+</p> 	<ul style="list-style-type: none"> ● 5× 10/100/1000 Mbps RJ45 ports ● With four PoE+ ports, transfers data and power on one single cable ● Works with IEEE 802.3af/at compliant PDs ● 802.1p/DSCP QoS enable smooth latency-sensitive traffic ● Supports PoE Power up to 30 W for each PoE port ● Supports PoE Power up to 65 W for all PoE ports* ● Requires no configuration and installation 	174.99	2	349.98
5.	<p>4 PORT RJ45 CAT6 LAN & RJ11 TEL Socket Floor Panel Ground Outlet Receptacle</p> 	<ul style="list-style-type: none"> ● Pop-up RJ11&RJ45 CAT6 Ground Plate included module ● Panel material: Brass ● Base Material: Metal ● Panel Size:120mm×120mm, ● Mounting box size:100mm×100mm×55mm 	154.51	8	1236.08
6.	<p>3 PORT RJ45 CAT6</p>	<ul style="list-style-type: none"> ● Pop-up CAT6 LAN Ground Plate included module 	182.46	32	5838.72

	<p>Network LAN Floor Panel Ground Outlet Socket Receptacle</p> 	<ul style="list-style-type: none"> ● Panel material: Brass ● Base Material: Metal ● Panel Size:120mm×120mm ● Mounting box size:100mm×100mm×55mm 			
7.	<p>1 PORT RJ45 CAT6 Network LAN wall face plate</p> 	<ul style="list-style-type: none"> ● Single gang module faceplate, supplied with one 50x25 Cat6 module. 	20.00	6	120.00
8.	<p>Cat6 RJ45 Ethernet Cable 50M</p>	<ul style="list-style-type: none"> ● High performance CAT6 ethernet LAN cable provides universal connectivity for high-speed network ● Supports Gigabit Ethernet (1000 Base-T) standard with transmission bandwidth of up to 250MHz ● Future-proof your network for 10-Gigabit Ethernet 	50.00	8	400.00

		<ul style="list-style-type: none"> ● 4-pair unshielded twisted pair (UTP) cable with 26 AWG conductor ● Thicker conductor diameter for higher reliability and higher data rates ● Higher signal-to-noise ratio 			
9.	Cat6 RJ45 Ethernet Cable 30M 	<ul style="list-style-type: none"> ● Connects all the hardware destinations on a Local Area Network (LAN) ● Perfect for use with 10 Base-T, 100 Base-T, 1000 Base-T networks and GigaBit Ethernet ● Transfer data up to 1000Mbps -such as rate of the 5E /6 class level required ● High transmission performance and low signal loss. 	30.00	128	3840.00
10.	UGREEN Cat6 RJ45 Ethernet Cable 3M	<ul style="list-style-type: none"> ● 10Gbps Transfer Speed ● Stable Transmission ● Tiny & Durable 	8.39	128	1073.92

					
11.	<p>Dell SE2222H Monitor</p> 	<ul style="list-style-type: none"> • 22" Inch FHD 1920x1080 LED Monitor 	559	128	71552.00
12.	<p>Dell Optical Mouse MS116</p> 	<ul style="list-style-type: none"> • Wired Connectivity • Optical Detection Technology • 1000 dpi Movement Resolution 	54	128	6912.00

13.	<p>Dell Multimedia Keyboard KB216</p> 	<ul style="list-style-type: none"> ● Wired Connectivity ● Chiclet Keys Style ● 44.2 cm x 12.7 cm x 2.44 cm ● Weight - 503 g 	72	128	9216.00
14.	<p>Dell XPS Desktop</p> 	<ul style="list-style-type: none"> ● 11th Gen Intel® Core™ i5-11400 processor (6-Core, 12M Cache, 2.6GHz to 4.4GHz) ● Windows 11 Home ● NVIDIA® GeForce® GTX 1650 SUPER™ 4GB GDDR6 ● 8GB, 8Gx1, DDR4, 2933MHz ● 512 GB, M.2, PCIe NVMe, SSD ● Microsoft Office Home and Student 2021 	4099	128	524672.00
15.	<p>ViewSonic PA503W 3,800 Lumens WXGA Business Projector</p>	<ul style="list-style-type: none"> ● Native Resolution: 1280x800 ● Brightness: 3800 ANSI lumens ● Throw Distance: 1m-10.98m (100" @3.34m) ● Computer in (share with component): 2 ● Composite: 1 ● Audio-in (3.5mm): 1 ● HDMI: 1 (Back) 	1649	6	9894.00

		<ul style="list-style-type: none"> ● Monitor out: 1 ● Audio out (3.5mm): 1 ● Speaker: 2W 			
16.	<p>Brother MFC-L3750CDW Laser Printer</p> 	<ul style="list-style-type: none"> ● Color LED Multi-Function Center with Wireless & Network Connectivity ● Automatic 2-sided Color Print, ● ADF- Multi-page Scan, Copy, Fax ● High Productivity with Fast Print Speeds & Multi-tasking ● Wi-Fi Direct, Mobile & USB Print ● Low Cost Quality Print Resolution with Affordable Toner 	2099	2	4198.00
17.	<p>PowerEdge R440 Rack Server</p> 	<ul style="list-style-type: none"> ● Chassis: 2.5" Chassis with up to 8 Hot Plug Hard Drives, PERC/HBA11 ● Processor: Intel Xeon Silver 4208 2.1G, 8C/16T, 9.6GT/s, 11M Cache, Turbo, HT (85W) DDR4-2400 ● Memory DIMM Type and Speed: 3200 MT/s RDIMMs 	13788.27	1	13788.27

		<ul style="list-style-type: none"> ● Memory: 8GB RDIMM, 3200 MT/s, Single Rank ● RAID: C7, Unconfigured RAID for HDDs or SSDs (Mixed Drive Types Allowed) ● Power Supply: Dual, Hot Plug, Redundant Power Supply (1+1), 550W 			
TOTAL					677,849.93

Reflection

1. Are you surprised by the prices? How were you surprised?

- Yes, we were surprised by the total cost needed for all these LAN devices. We were expecting the overall cost to be a lot cheaper because we did not think some of the items such as the cable would cost as much. Furthermore, it is common to know that buying electronic devices will be expensive but we were surprised that buying in bulk would raise the cost sharply. Thankfully, we managed to list out all the devices within the allocated budget which is RM900,000.00 with RM222,150.07 to spare.

2. Have you ever considered cost as a factor for choosing networking devices?

- Yes, because the allocated budget for purchasing networking devices for this project is limited to RM 900,000.00. We have to plan carefully for the items so it does not exceed the budget. However, choosing devices with good specification is also one of our main factors in selecting the appropriate devices to ensure the project can be used in the long term.

3. What are the major differences between the same devices from different brands? For example, Cisco and Huawei Routers.
 - The same devices from different brands might be targeting different use cases and environments. For example Huawei routers are more suitable for home and family use as it is for less dense usage while Cisco routers on the other hand are mainly for high density usage such as business and industrial.

Reference

Omada Gigabit VPN Router ER7206 (TL-ER7206)

<https://www.tp-link.com/my/business-networking/omada-sdn-router/er7206/#overview>

Band Multi-Gigabit Ceiling Mount Access Point

<https://www.tp-link.com/my/business-networking/omada-sdn-access-point/eap660-hd/#overview>

48 port switch Ubiquiti Switch Pro 48 PoE USW-Pro-48-PoE

<https://store.ui.com/collections/unifi-network-switching/products/usw-pro-48-poe>

TL-SG1005P V2 5-Port Gigabit Desktop Switch with 4-Port PoE+

<https://www.tp-link.com/us/business-networking/unmanaged-switch/tl-sg1005p/v2/#overview>

ViewSonic PA503W 3,800 Lumens WXGA Business Projector

<https://www.viewsonic.com/my/products/projectors/PA503W#specs>

Brother MFC-L3750CDW Laser Printer

<https://www.brother.com.my/en/products/all-printers/printers/mfc-13750cdw>

PowerEdge R440 Rack Server

<https://dell.to/32t0qt4>

Dell SE2222H Monitor

Dell Optical Mouse MS116

Dell Multimedia Keyboard KB216

Dell XPS Desktop

<https://www.dell.com/en-my>

3 PORT RJ45 CAT6 Network LAN Floor Panel Ground Outlet Socket Receptacle

<https://www.aliexpress.com/item/32846005290.html>

4 PORT RJ45 CAT6 LAN & RJ11 TEL Socket Floor Panel Ground Outlet Receptacle

<https://www.aliexpress.com/item/32791157483.html>